



A synoptic approach to weather conditions discloses a relationship with ambulatory blood pressure in hypertensives

Author(s): Morabito M, Crisci A, Orlandini S, Maracchi G, Gensini GF, Modesti PA
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Abstract:

BACKGROUND: Higher blood pressure (BP) values in cold than in hot months has been documented in hypertensives. These changes may potentially contribute to the observed excess winter cardiovascular mortality. However, the association with weather has always been investigated by considering the relationship with a single variable rather than considering the combination of ground weather variables characterizing a specific weather pattern (air mass (AM)). **METHODS:** We retrospectively investigate in Florence (Italy) the relationship between BP and specific AMs in hypertensive subjects (n Euro Surveillance (Bulletin European Sur Les Maladies Transmissibles; European Communicable Disease Bulletin) 540) referred to our Hypertension Unit for 24-h ambulatory BP monitoring during the period of the year characterized by the highest weather variability (winter). Five different winter daily AMs were classified according to the combination of ground weather data (air temperature, cloud cover, relative humidity, atmospheric pressure, wind speed, and direction). **RESULTS:** Multiple variable analysis selected the AM as a significant predictor of mean 24-h BP ($P < 0.01$ for diastolic BP (DBP) and $P < 0.05$ for systolic BP (SBP)), daytime DBP ($P < 0.001$) and nighttime BP ($P < 0.01$ for both SBP and DBP), with higher BP values observed in cyclonic (unstable, cloudy, and mild weather) than in anticyclonic (settled, cloudless, and cold weather) days. When the association with 2-day sequences of AMs was considered, an increase in ambulatory BP followed a sudden day-to-day change of weather pattern going from anticyclonic to cyclonic days. **CONCLUSIONS:** The weather considered as a combination of different weather variables may affect BP. The forecast of a sudden change of AM could provide important information helpful for hypertensives during winter.

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Resource Description

Communication:

resource focus on research or methods on how to communicate or frame issues on climate change; surveys of attitudes, knowledge, beliefs about climate change

A focus of content

Other Communication Audience: Weather forecasters

Exposure :

weather or climate related pathway by which climate change affects health

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Meteorological Factors, Meteorological Factors, Meteorological Factors, Temperature, Other Exposure

Temperature: Fluctuations

Other Exposure: Cloud cover

Geographic Feature: ☒

resource focuses on specific type of geography

None or Unspecified

Geographic Location: ☒

resource focuses on specific location

Non-United States

Non-United States: Europe

European Region/Country: European Country

Other European Country : Italy

Health Impact: ☒

specification of health effect or disease related to climate change exposure

Cardiovascular Effect

Cardiovascular Effect: Other Cardiovascular Effect

Cardiovascular Disease (other): Hypertension

Intervention: ☒

strategy to prepare for or reduce the impact of climate change on health

A focus of content

Mitigation/Adaptation: ☒

mitigation or adaptation strategy is a focus of resource

Adaptation

Population of Concern: A focus of content

Population of Concern: ☒

populations at particular risk or vulnerability to climate change impacts

Elderly

Other Vulnerable Population: People with hypertension

Resource Type: ☒

format or standard characteristic of resource

Research Article

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Timescale:

time period studied

Time Scale Unspecified

Vulnerability/Impact Assessment:

resource focus on process of identifying, quantifying, and prioritizing vulnerabilities in a system

A focus of content